2.8 Reasonable and Prudent Alternatives

Regulations (50 CFR 402.02) implementing section 7 of the Act define reasonable and prudent alternatives (RPAs) as alternative actions, identified during formal consultation, that (1) can be implemented in a manner consistent with the intended purpose of the proposed Federal action; (2) can be implemented consistent with the scope of the action agency's legal authority and jurisdiction; (3) are economically and technologically feasible; and (4) would, the Service believes, avoid the likelihood of the Federal action jeopardizing the continued existence of listed species or destroying or adversely modifying critical habitat.

The EPA's authorities include the responsibility to review and approve or disapprove state revisions of their water quality standards; states are to review their water quality standards, at least once every 3 years (40 CFR sections 131.20 through 131.21). If EPA disapproves a state's new or revised water quality criteria and the state does not adopt specified changes, the EPA Administrator has the responsibility and authority to promptly propose and promulgate such criteria (40 CFR section 131.22). The water quality standards considered in this action are implemented, in part, through wastewater discharge permits, administered by EPA through the National Pollutant Discharge Elimination System (NPDES). Monitoring, including biological monitoring, may be required of dischargers as part of their permit conditions (40 CFR 122.48). When the ESA is applicable and requires consideration or adoption of particular permit conditions, those requirements must be followed (40 CFR 122.49).

The RPAs described here are expected to be incorporated into NPDES permits when they are issued or renewed. At present, NPDES permits are issued by EPA for Idaho. The regulations for administering NPDES permits (40 CFR 122.49) state that when the ESA is applicable and requires consideration or adoption of particular permit conditions, those requirements must be followed. The service recognizes that EPA and the Idaho Department of Environmental Quality (DEQ) are in negotiations to delegate the administration of NPDES permits to Idaho. The details of this delegation have yet to be determined and will presumably be a separate federal action. Regardless, the Service anticipates that EPA retains "backstop" responsibilities for state administered programs and may review and under certain conditions, object to the issuance of a State administered permit. Among the potential conditions are if the proposed permit misinterprets the Clean Water Act (CWA) or any guidelines or regulations under CWA, or misapplies them to the facts (40 CFR 123.44). We interpret 40 CFR 122.49 as being a regulation or guideline under CWA.

We recognize that although the ESA section 7 consultation process is strictly relevant only to federal interagency coordination and cooperation, the national implementation of the Clean Water Act goals and responsibilities involve partnerships between EPA, the states, and authorized tribes. In Idaho, many of EPA's authorities and responsibilities under the CWA and implementing regulations in turn rely on the application and interpretation of the Idaho DEQ's water quality standards. Authoritative interpretations of the Idaho DEQ water quality standards come from the Idaho DEQ. However, our read of the plain language of their regulations is that components of Idaho's water quality standards that relate to their ability to implement the RPA's named here are matters of discretionary judgement on the part of the IDEQ. In particular, some RPA's relate to mixing zone restrictions. Whether mixing zones for point source permits are authorized for discharges is determined by the Idaho DEQ on a case-by-case basis (IDAPA

58.01.02.060, or for shorthand, §060). As protection of threatened or endangered species are not specifically mentioned in Idaho DEQ's mixing zone rules, whether mixing zones can be limited to protect ESA listed species depends upon Idaho DEQ's interpretation of other relevant language.

Two relevant portions of the Idaho Mixing Zone Policy are first, §60.02.h, "*the mixing zone shall not include more than twenty-five percent (25 %) of the low flow design discharge conditions …;*" and second, §60.02.i., where "*the Department may authorize a mixing zone that varies from the limits in Subsection 060.01.h. if it is established that, (i.) smaller mixing zone is needed to avoid an unreasonable interference with, or danger to, beneficial uses…*" Similarly, a mixing zone could exceed the twenty-five percent (25%) of the low flow design discharge conditions constraint, if "*a larger mixing zone is needed by the discharger and does not cause an unreasonable interference with, or danger to, beneficial uses" (§60.02.ii.).*

Therefore it is clear that Idaho DEQ has authority to constrain mixing zones if needed to protect beneficial uses. However, protection of ESA listed species is not a beneficial use per se under the Idaho regulations. While the regulatory definition of "*beneficial use*" of water in the Idaho DEQ definitions does not even mention aquatic life (§010.08), elsewhere aquatic life beneficial uses are described by thermal classifications. For instance, the "cold water aquatic life" use designation (§101.01.a), requires "*water quality appropriate for the protection and maintenance of a viable aquatic life community for cold water species.*" A viable aquatic life community is not specifically defined in regulation, although §054 describes factors to consider using the Department's "Water Body Assessment Guidance" to determine "whether a healthy, balanced biological community is present" when assessing beneficial use support status. The most recent Water Body Assessment Guidance [ADDIN EN.CITE <EndNote><Cite><Author>Grafe</Author><Year>2002</Year><RecNum>6143</RecNum><IDText>230</IDText><Prefix>"WBAG`,"</Prefix><DisplayText>("WBAG," Grafe et al. 2002)</DisplayText><record><rec-number>6143</rec-number><foreign-keys><key app="EN" db-id="aperft9tzr5wsye92dpxzadn5d0a0vvdxr9w" timestamp="1421000950">6143</key></foreign-keys><ref-type name="Report">27</ref-type><contributors><authors><author>Grafe, Cynthia S.</author><author>Mebane, Christopher A.</author><author>McIntyre, M.J.</author><author>Essig, Don A.</author><author>Brandt, D.H.</author><author>Mosier, D.T.</author></authors></contributors><titles><title>The Idaho Department of Environmental Quality Water Body Assessment Guidance, Second Edition</title></titles><pages>230</pages><keywords><keyword>biocriteria</keyword><keyword>bioassessment</keyword><keyword>Monitoring</keyword></keywords><dates><year>2002</year></dates><pub-location>Boise, Idaho</pub-location><publisher>Idaho Department of Environmental Quality</publisher><urls><related-urls><url>http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment.aspx</url></related-urls></urls></record></Cite></EndNote>] describes procedures for considering aquatic benthic macroinvertebrate, fish community, and stream physical habitat features to assess whether community-based aquatic life beneficial uses are met. The procedures are not species-specific, although communities are comprised of interacting populations of species, so protection of communities generally implies protection of the species within. However, in section 1.3 "*How to use this document*," the assessor is advised that the guidance does not cover every eventuality and that judgement and deviation from the strict methods may

be needed in some situations. The WBAG provides "*guidance includes information on DEQ policies, assumptions, and analytical methods. However, the document does not present a rigid structure limiting flexibility for unique situations or preclude the use of sound scientific judgment.*"

Therefore, because where present, threatened or endangered species are part of the natural structure of aquatic communities, we believe that EPA and DEQ have certain authority and discretion to further constrain authorized discharges from being allowed to reach the "face value" criteria concentrations to avoid danger to a vulnerable component of the natural aquatic communities, in situations when they believe it to be appropriate.

Five of the following eight RPAs to avoid jeopardy and adverse modification of critical habitat for listed species other than snails are the same as those described by NMFS (2014a) in their Opinion on this action. The other three RPAs are unique to this Opinion but follow a similar approach to that used by NMFS. That approach involves providing a specific timeframe for EPA to develop revised aquatic criteria that are likely to avoid jeopardy or adverse modification of critical habitat. While these criteria are being developed, either the Human Health Criteria would be used for that purpose, as applicable, or discretionary restrictions would be applied on effluent volume-related permit actions. The RPAs for listed snail species also consider their limited mobility and specific protections are included to protect occupied habitat.

For the bull trout and the Kootenai River white sturgeon (and their critical habitats), the Service has identified a separate RPA for each of six inorganic metals: arsenic, copper, cyanide, mercury, selenium, and zinc. The RPAs for arsenic, copper, cyanide, mercury, and selenium are the same as those described by NMFS (2014a) for salmon and steelhead because we determined that the terms of the RPA are likely to avoid jeopardy and adverse modification of critical habitat for our listed species because they were developed in coordination with EPA, and because consistency of content in the RPAs between the Services will facilitate efficient and effective implementation by EPA. For zinc, a RPA addressing the bull trout and the sturgeon is similar to the RPA for copper in the NMFS (2014) Opinion.

For the listed snails considered herein, the Service has identified RPAs to address arsenic, copper, lead, zinc, and nickel. The RPA for arsenic is the same as that described by NMFS (2014a) for salmon and steelhead in their Opinion on this action because the RPA is likely to avoid jeopardy of listed snails, because it was developed in coordination with EPA, and because consistency in the content of the RPA between the Services will facilitate efficient and effective implementation by EPA. The RPAs described below for copper, lead, zinc, and nickel are new.

In determining the time frame for implementing the RPAs in this Opinion the Service recognizes that, promulgation of rules under either the state or Federal process will require a minimum of 2 years to complete. For most water quality standards the state of Idaho will likely take the lead and promulgate state rules that require approval by the Idaho Board of Environmental Quality. Additionally, before becoming effective the rules will be reviewed by the Idaho Legislature. Finally, EPA approval of the new rules must also occur. Based on this process we have assumed that the soonest new rules can be completed is 2 years and have used 2 years for the implementation time frame for the RPAs that will not require additional analysis to derive new criteria (i.e., hardness floor, 2007 BLM copper criteria) (see Table 13).

For the other RPAs, EPA and/or the state will likely require additional time to conduct the analyses necessary to support new criteria (arsenic, mercury, selenium). These RPAs therefore

provide a longer implementation period of up to 8 years (see Table 13). To ensure that the listed species are not adversely affected during the implementation period, these RPAs include interim protective measures that the Service expects will adequately reduce any interim risk of harm to the species or their critical habitats. In addition, EPA consults with the Service over each new or reissued NPDES permit in Idaho to ensure that it will not cause jeopardy to the species or adverse modification to critical habitat. These factors, when considered together, will minimize any adverse effects during the implementation period while new criteria are developed and adopted.

2.8.1 RPAs for Arsenic

2.8.1.1 Interim Protection for Listed Snails

Until a new chronic criterion for arsenic is adopted, EPA shall ensure that the 10 µg/L recreational use standard is applied in all Water Quality Based Effluent Limitations (WQBELs) and Reasonable Potential to Exceed Calculations using the human health criteria and the current methodology for developing WQBELs to protect human health. The recreational use standard is interpreted to apply as inorganic, unfiltered, arsenic.

2.8.1.2 Interim Protection for the Bull Trout, Bull Trout Critical Habitat, the Kootenai River White Sturgeon, and Kootenai River Critical Habitat

Data limitations, ambiguities, and resulting uncertainties in the effects analysis include that waterborne arsenic concentrations that have been associated with risks of toxicity via food webs may overlap background concentrations measured at other locations (section 2.5.2.2). Therefore, in order to reduce the joint risks of causing unreasonable constraints or imprudently allowing discharges or releases of arsenic that could be harmful to listed species or habitats, the following monitoring and decision steps are considered appropriate.

Until a new chronic criterion for arsenic is adopted, EPA shall ensure that all effluent discharges located within habitats occupied by the bull trout and/or the Kootenai River white sturgeon and within areas of their designated critical habitat that are regulated under the NPDES program or controls of releases which meet substantive requirements of NPDES permits, shall comply with the following terms:

1. At discharge locations where at the edge of the mixing zone, unfiltered arsenic concentrations are measured or projected to be higher than natural background for the locale and annual geometric mean concentrations are higher than 5 µg/L, aquatic insect tissue samples shall be monitored in locations downstream of the discharge and in reference locations. The results shall be reported as an NPDES permit condition.
2. If the above average aquatic insect tissue concentrations exceed 20 mg/kg dw inorganic arsenic or 40 mg/kg dw at total arsenic, and are higher than reference concentrations for that site, then the issuance of an NPDES permit shall include provisions to reduce arsenic loading in order to reduce impairment of aquatic life uses. Arsenic in benthic invertebrate prey organisms is intended as a representative composite community sample (NMFS 2014a, Appendix E). These provisions are not required if fish population surveys using surrogate species, such as the rainbow trout, show that appreciable adverse effects are not occurring, as defined in Appendix E, Biomonitoring of Effects, of NMFS (2014a).

2.8.1.3 New Chronic Aquatic Life Criterion for Arsenic (based on NMFS 2014a)

The EPA shall ensure, either through EPA promulgation of a criterion or EPA approval of a state-promulgated criterion, that a new chronic criterion for arsenic is in effect in Idaho by May 7, 2021. The new criterion shall avoid jeopardy of listed aquatic snails, the bull trout, the Kootenai River white sturgeon, and adverse modification of critical habitat for the bull trout and the white sturgeon, consistent with the discussion and analysis in this Opinion. If ESA consultation is required for the new criterion, EPA shall provide an adequate biological assessment/evaluation to the Service and initiate consultation at least 135 days in advance of May 7, 2020, unless the Service and EPA mutually agree to a different time-frame.

2.8.1.4 Analysis of the Reasonable and Prudent Alternative for Arsenic

An interim level of protection of the listed species and critical habitats referenced above relative to arsenic is available through use of the human health criterion, which is 10 µg/L. This criterion is applicable to all waters in the action area. Because it is more stringent than the chronic criterion of 150 µg/L, the criterion for the protection of human health is the controlling criterion for NPDES permitting actions. The application of this lower standard, coupled with biological monitoring is likely to provide adequate information to review effects to listed species and critical habitats in a site-specific manner. The 5 µg/L trigger for initiating monitoring was selected as a value that was high enough to be above natural background concentrations in most settings (i.e., limit "false positives") and low enough to be near the low range of concentrations associated with adverse effects or appreciable bioaccumulation (section 2.5.2). Because any new or reissued NPDES permits will be subject to individual ESA consultation, as appropriate, to ensure they avoid jeopardy or adverse modification of critical habitat, EPA will make adjustments as necessary during the NPDES permitting cycle taking into account local conditions to avoid measureable direct effects caused by arsenic that are likely to cause jeopardy to the above listed species and/or adverse modification of critical habitats. By avoiding such measureable direct effects, use of the human health criterion is likely to provide adequate protection in the interim to avoid jeopardy to listed species and adverse modification of critical habitat.

EPA adoption of a new chronic aquatic life criterion for arsenic by May 7, 2021 will be subject to ESA consultation, as appropriate, to ensure that the new criterion is likely to be adequately protective of listed species and critical habitats in terms of avoiding jeopardy and adverse modification of critical habitat.

For the above reasons, the Service concludes that implementation of the RPA for arsenic is not likely to jeopardize any of the listed species considered in this Opinion or to adversely modify bull trout or Kootenai River white sturgeon critical habitat.

2.8.2 RPAs for Copper

2.8.2.1 Interim Protection for Listed Snails, the Bull Trout, Bull Trout Critical Habitat, the Kootenai River White Sturgeon, and Kootenai White Sturgeon Critical Habitat

Listed Snake River Snails

To provide interim protection to Snake River snails and the Bruneau hot springsnail, until new criteria are adopted, EPA shall ensure that mixing zone fractions and allowable effluent volumes are constrained to limit ambient copper concentrations from exceeding 1/4 (25 percent) of the

value calculated using the 2007 chronic aquatic life criterion for copper [ADDIN EN.CITE ADDIN EN.CITE.DATA]. [1]

Bull Trout and Kootenai River White Sturgeon (based on NMFS 2014a)

Until new criteria are adopted, a zone of passage must be maintained around any mixing zone for discharges that include copper that is sufficient to allow unimpeded passage of adult and juvenile bull trout and sturgeon.

Permits for new discharges must ensure a zone of passage for these species that persists under seasonal flow conditions (see Appendix D of NMFS 2014a). If the regulatory mixing zone is limited to less than or equal to 25 percent of the seasonal flow conditions, then a sufficient zone of passage is presumed to be present.

Permits reissued for existing discharges must ensure a zone of passage for adult and juvenile bull trout and sturgeon that persists under seasonal flow conditions. If the regulatory mixing zone is limited to less than or equal to 25 percent of the volume of a stream, then a sufficient zone of passage is presumed to be present. If existing discharges were calculated using greater than 25 percent of the seasonal flow conditions for applying aquatic life criteria, the mixing zone must be reduced to 25 percent unless one of the following conditions exists:

1. An evidence-based "Salmonid Zone of Passage Demonstration" (see Appendix F of NMFS 2014a) indicates that impeding fish movement is unlikely, or;
2. Biological monitoring of aquatic communities in the downstream receiving waters shows no appreciable adverse effects relative to reference conditions as described in Appendix E,[HYPERLINK "file:///C:\\Users\\cfletcher\\Desktop\\Idaho%20Toxics8213\\Toxics%20BO_2014\\NOAA%20BO\\NOAA_Toxics%20EPA%2006%20May_2014_final_Word%20wo%20Cover%20ltr.docx" \l "biomonitoring"]Biomonitoring of Effects, in NMFS (2014a), and biological whole-effluent toxicity (WET) testing is consistently negative, as defined below:
    a. WET testing shall be required, using at least the 7-day *Ceriodaphnia dubia* 3-brood test and the 7-day fathead minnow growth and survival test. If previous testing of a facility's effluents has demonstrated that one test is more sensitive, at EPA's discretion, it is acceptable to base further testing on only the more sensitive test. Toxicity trigger concentrations for WET tests shall also be established using dilution series based upon no more than 25 percent of the applicable critical flow volume. The dilution series for WET testing (7Q10) shall be designed such that one treatment consists of 100 percent effluent, and at least one treatment is more dilute than the targeted critical flow conditions. Receiving waters upstream of the effluent discharge should be used as dilution water.

       The "critical concentration" is defined here as the condition when the smallest permitted dilution factor occurs, modified by a 25 percent mixing zone fraction. For

[1] The distributions of the listed aquatic snails do not overlap with those of the bull trout and Kootenai River white sturgeon; therefore, the no mixing zone restriction does not apply to discharges into the habitats of bull trout and sturgeon.

example, if the minimum effluent dilution occurring at a site is a 1:4 ratio (one part effluent to four parts streamwater), then because only 25 percent of the measured streamflow is authorized for dilution, the dilution factor for effluent testing is likewise reduced to 1:1. The critical concentration would then be 50 percent effluent, i.e., one part each effluent and dilution water.

WET tests results need to be consistently negative to indicate the absence of appreciable instream toxicity in test conditions that reflect the critical effluent concentration above. A "negative test result" is produced by a test meeting the performance objectives of a passing test according to EPA (2002c) or EPA (2010c). Test results are considered to be consistently negative if the failure rate is less than one in 20.

b. If instream biological monitoring shows adverse effects to reference conditions or if WET tests are not consistently negative, then a toxicity identification evaluation and a toxicity reduction evaluation (TIE/TRE) must be undertaken to identify and remedy the causes of toxicity, which may include reducing effluent limits as warranted. Because considerable judgment may be involved in designing and carrying out a TIE/TRE, and because the results are performance-based (e.g., no detectable toxicity observed), more specific guidance is inappropriate to provide here. See Mount and Hockett [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>Mount</Author><Year>2000</Year><RecNum>2342</RecNum><DisplayText>(2000)</DisplayText><record><rec-number>2342</rec-number><foreign-keys><key app="EN" db-id="aperft9tzr5wsye92dpxzadn5d0a0vvdxr9w" timestamp="0">2342</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Mount, David R.</author><author>Hockett, J. Russell</author></authors></contributors><titles><title>Use of toxicity identification evaluation methods to characterize, identify, and confirm hexavalent chromium toxicity in an industrial effluent</title><secondary-title>Water Research</secondary-title></titles><periodical><full-title>Water Research</full-title><abbr-1>Water Res.</abbr-1></periodical><pages>1379-1385</pages><volume>34</volume><number>4</number><keywords><keyword>WET (whole effluent toxicity)</keyword><keyword>Idaho toxics consultation</keyword></keywords><dates><year>2000</year></dates><urls></urls></record></Cite></EndNote>] for an example of a TIE/TRE.

2.8.2.2 New Acute and Chronic Aquatic Life Criteria for Copper (based on NMFS 2014a)

The EPA shall ensure, either through EPA promulgation of criteria or EPA approval of state-promulgated criteria, that new acute and chronic criteria for copper are in effect in Idaho by May 7, 2017. The new criteria shall be no less stringent than the 2007 CWA section 304(a) national recommended aquatic life criteria (i.e., the Biotic Ligand Model [BLM]) for copper. The Service does not anticipate that additional consultation will be required if the 2007 national recommended aquatic life criteria for copper are adopted by EPA.

2.8.2.3 Removal of Low-End Hardness Floor (based on NMFS 2014a)

The EPA shall recommend that the state of Idaho adopt, and EPA will promulgate, if necessary, the removal of the low end hardness floor on the hardness dependent metals criteria equations by May 7, 2017.

2.8.2.4 Analysis of the Reasonable and Prudent Alternative for Copper

Constraining allowable effluent volumes to limit ambient copper concentrations from exceeding the value calculated using the 2007 chronic aquatic life criterion for copper during the interim period until new and protective copper criteria are in effect is likely to avoid most adverse effects to listed snails, bull trout, or sturgeon.

Some adverse effects would still be expected if ambient concentrations were at the 2007 chronic aquatic life criterion, but these would be minimized by further limiting mixing zone fractions to 1/4 (25 percent) of the receiving water discharge in flowing waters is effectively similar to reducing the criteria by 0.25X (NMFS 2014a). Few if any adverse effects to listed species or habitats would be expected at 0.25X the concentration resulting from the 2007 version of EPA's copper criteria. The 0.25X mixing zone authorization is consistent with IDEQ water quality standards and EPA permitting practices, as described in the introduction to section 2.8.

For the bull trout and the sturgeon and their critical habitats, the interim requirement until May 7, 2017, of ensuring an adequate zone of passage under NPDES permits that contain copper discharge limits, as described in the RPA for copper, is likely to significantly minimize adverse effects to the bull trout and to the Kootenai River white sturgeon and their critical habitat. Any new permits will also be subject to individual consultation, as appropriate, to ensure they avoid jeopardy or adverse modification of critical habitat.

NMFS (2014a, Appendix C) analyzed "implementation of the 2007 BLM EPA copper criteria and conclude[d] that they are likely to avoid jeopardy to the listed species or critical habitat considered in this Opinion." The Service agrees with NMFS's reasoning and this conclusion and finds that it is applicable to the bull trout and its critical habitat, and to the Kootenai River white sturgeon and its critical habitat.

For the above reasons, the Service concludes that implementation of the RPA for copper is not likely to jeopardize any of the listed species considered in this Opinion or to adversely modify critical habitat for the bull trout and the sturgeon.

2.8.3 RPA for Cyanide

2.8.3.1 Interim Protection for the Bull Trout, Bull Trout Critical Habitat, the Kootenai River White Sturgeon, and Kootenai River White Sturgeon Critical Habitat (based on NMFS 2014a)

Until new criteria are adopted, a zone of passage must be maintained around any mixing zone for discharges that include cyanide that is sufficient to allow unimpeded passage of adult and juvenile bull trout and sturgeon.

Permits reissued for existing discharges must ensure a zone of passage for these species that persists under seasonal flow conditions. If the regulatory mixing zone is limited to less than or equal to 25 percent of the volume of a stream, then a sufficient zone of passage is presumed to be present. If existing discharges were calculated using greater than 25 percent of the seasonal flow conditions for applying aquatic life criteria, the mixing zone must be reduced to 25 percent

unless one of the following conditions exists:

1. An evidence-based "Salmonid Zone of Passage Demonstration" (see Appendix F of NMFS 2014a) indicates that impeding fish movements is unlikely, or;
2. Biological monitoring of aquatic communities in the downstream receiving waters shows no appreciable adverse effects relative to reference conditions as described in Appendix E[HYPERLINK "file:///C:\\Users\\cfletcher\\Desktop\\Idaho%20Toxics8213\\Toxics%20BO_2014\\NOAA%20BO\\NOAA_Toxics%20EPA%2006%20May_2014_final_Word%20wo%20Cover%20ltr.docx" \l "biomonitoring"](Biomonitoring of Effects) of NMFS (2014a), and biological WET testing is consistently negative, as defined below:

   a. WET testing shall be required, using at least the 7-day *Ceriodaphnia dubia* 3-brood test and the 7-day fathead minnow growth and survival test. If previous testing of a facility's effluents have demonstrated that one test is more sensitive, at EPA's discretion it is acceptable to base further testing on only the more sensitive test. Toxicity trigger concentrations for WET tests shall also be established using dilution series based upon no more than 25 percent of the applicable critical flow volume. The dilution series for WET testing (7Q10) shall be designed such that one treatment consists of 100 percent effluent, and at least one treatment is more dilute than the targeted critical flow conditions. Receiving waters upstream of the effluent discharge should be used as dilution water.

      The "critical concentration" is defined here as the condition when the smallest permitted dilution factor occurs, modified by a 25 percent mixing zone fraction. For example, if the minimum effluent dilution occurring at a site is a 1:4 ratio (one part effluent to four parts streamwater), then because only 25 percent of the measured streamflow is authorized for dilution; then the dilution factor for effluent testing is likewise reduced to 1:1. The critical concentration would then be 50 percent effluent, i.e., one part each effluent and dilution water.

      WET tests results need to be consistently negative to indicate the absence of appreciable instream toxicity in test conditions that reflect the critical effluent concentration above. A "negative test result" is produced by a test meeting the performance objectives of a passing test according to EPA (2002c) or EPA (2010c). Test results are considered to be consistently negative if the failure rate is less than one in 20.

   c. If instream biological monitoring shows adverse effects to reference conditions or if WET tests are not consistently negative, then a toxicity identification evaluation and toxicity reduction evaluation (TIE/TRE) must be undertaken to identify and remedy the causes of toxicity, which may include reducing effluent limits as warranted. Because considerable judgment may be involved in designing and carrying out a TIE/TRE, and because the results are performance-based (e.g., no detectable toxicity observed), more specific guidance is inappropriate to provide here. See Mount and Hockett [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>Mount</Author><Year>2000</Year><RecNum>2342</RecNum><DisplayText>(2000)</DisplayText><record><rec-number>2342</rec-

number><foreign-keys><key app="EN" db-id="aperft9tzr5wsye92dpxzadn5d0a0vvdxr9w" timestamp="0">2342</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Mount, David R.</author><author>Hockett, J. Russell</author></authors></contributors><titles><title>Use of toxicity identification evaluation methods to characterize, identify, and confirm hexavalent chromium toxicity in an industrial effluent</title><secondary-title>Water Research</secondary-title></titles><periodical><full-title>Water Research</full-title><abbr-1>Water Res.</abbr-1></periodical><pages>1379-1385</pages><volume>34</volume><number>4</number><keywords><keyword>WET (whole effluent toxicity)</keyword><keyword>Idaho toxics consultation</keyword></keywords><dates><year>2000</year></dates><urls></urls></record></Cite></EndNote>] for an example of a TIE/TRE.

2.8.3.2 New Acute and Chronic Aquatic Life Criteria for Cyanide

The EPA shall ensure, either through EPA promulgation of criteria or EPA approval of a state-promulgated criteria, that new acute and chronic criteria for cyanide are in effect in Idaho by May 7, 2021. The new criteria: shall be calculated using a temperature/toxicity correlation equation; shall provide adequate protection to avoid jeopardizing the bull trout and the Kootenai River white sturgeon, and to avoid adversely modifying the critical habitats of the bull trout and the Kootenai River white sturgeon; and shall be consistent with the discussion and analysis in this Opinion. In the absence of specific data, the Service's best estimate of adequately safe cyanide concentrations for acute and chronic exposures, respectively, is 13 and 2.5 µg/L[2]. If

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[2] These numbers are derived by halving the lowest and coldest acute LC50 of 27 µg/L and the lowest chronic low-effects concentrations of about 5 µg/L. The rationale of halving an acutely toxic concentration to extrapolate to a concentration that would kill few if any individuals has been incorporated into EPA's criteria derivation guidelines [ADDIN EN.CITE ADDIN EN.CITE.DATA], and has more recently been supported by analyses by the USFWS [ADDIN EN.CITE <EndNote><Cite><Author>USFWS</Author><Year>2010</Year><RecNum>3340</RecNum><IDText>329</IDText><DisplayText>(USFWS 2010)</DisplayText><record><rec-number>3340</rec-number><foreign-keys><key app="EN" db-id="aperft9tzr5wsye92dpxzadn5d0a0vvdxr9w" timestamp="0">3340</key></foreign-keys><ref-type name="Report">27</ref-type><contributors><authors><author>USFWS</author></authors></contributors><titles><title>Draft Biological Opinion on EPA's Proposed Program of Continuing Approval or Promulgation of New Cyanide Criteria in State and Tribal Water Quality Standards</title></titles><pages>329</pages><keywords><keyword>Idaho toxics consultation</keyword><keyword>Cyanide (CN)</keyword></keywords><dates><year>2010</year><pub-dates><date>January 15, 2010</date></pub-dates></dates><pub-location>Arlington, VA</pub-location><publisher>U.S. Fish and Wildlife Service</publisher><urls></urls><research-notes> </research-notes></record></Cite></EndNote>] and the NMFS [ADDIN EN.CITE <EndNote><Cite><Author>NMFS</Author><Year>2014</Year><RecNum>5291</RecNum><IDText>528</IDText><DisplayText>(NMFS 2014)</DisplayText><record><rec-number>5291</rec-number><foreign-keys><key app="EN" db-id="aperft9tzr5wsye92dpxzadn5d0a0vvdxr9w" timestamp="1387306015">5291</key></foreign-keys><ref-type name="Report">27</ref-type><contributors><authors><author>NMFS</author></authors></contributors><titles><title>Biological Opinion on USEPA's Approval of the State of Idaho's Water Quality Criteria for Toxic Substances</title><alt-title>Endangered Species Act - Section 7 consultation biological opinion and Magnuson-Stevens Fishery Conservation and
Management Act Essential Fish Habitat consultation:</alt-title><short-title>Numeric Criteria Toxic Pollutants - The Idaho Water Quality Standards (web page title)</short-

ESA consultation is required for the new criteria, EPA shall provide an adequate biological evaluation to the Service and initiate consultation at least 135 days in advance of May 7, 2020, unless the Service and EPA mutually agree to a different time-frame.

2.8.3.3 Analysis of the Reasonable and Prudent Alternative for Cyanide

Implementation of more restrictive practices in developing cyanide discharge limits that are authorized under NPDES permits as described in the RPA for cyanide is likely to sufficiently minimize adverse effects to the bull trout and to the sturgeon as well as to their critical habitats. These practices will ensure that an adequate zone of passage exists for these species under all flow conditions, and will provide for biological monitoring and whole-effluent toxicity testing to ensure that permit limits are protective of the bull trout and the sturgeon and their prey species. This monitoring will be done at each discharge site by taking into account the localized conditions that affect the toxicity of cyanide. Based on development of these site-specific limits and the associated monitoring of discharge levels, combined with the fact that the Service consults, as appropriate, with EPA over each new or reissued NPDES permit, we expect only minor adverse effects to the bull trout, Kootenai River white sturgeon, and to their critical habitats with implementation of the RPA.

Limiting mixing zone fractions to 1/4 (25 percent) of the receiving water discharge in flowing waters is effectively similar to reducing the criteria by 0.25X (NMFS 2014a). While adverse effects were identified at or below the existing criteria concentrations, few if any adverse effects to listed species or habitats would be expected at 0.25X the criteria concentrations. The 0.25X mixing zone authorization is consistent with IDEQ water quality standards and EPA permitting practices, as described in the introduction to section 2.8.

The adoption of a new chronic aquatic life criteria for cyanide by May 7, 2021 will be subject to ESA consultation, as appropriate, to ensure that the new criteria are adequately protective in terms of avoiding jeopardy and adverse modification of critical habitat.

For the above reasons, the Service concludes that the RPA for cyanide is not likely to jeopardize any of the listed species considered in this Opinion or adversely modify bull trout or Kootenai River white sturgeon critical habitat.

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title></titles><pages>528</pages><keywords><keyword>Idaho toxics consultation</keyword><keyword>Endangered species</keyword><keyword>Water quality criteria</keyword><keyword>Se (selenium)</keyword><keyword>Hg (mercury)</keyword><keyword>Cu (copper)</keyword><keyword>Zn (zinc)</keyword><keyword>Pb (lead)</keyword><keyword>Ni (nickel)</keyword></keywords><dates><year>2014</year><pub-dates><date>May 7</date></pub-dates></dates><pub-location>Boise, Idaho</pub-location><publisher>National Marine Fisheries Service, Northwest Region</publisher><isbn>NMFS No: 2000-1484</isbn><urls><related-urls><url>https://pcts.nmfs.noaa.gov/pcts-web/ </url></related-urls><pdf-urls><url>file://C:\Users\cmebane\Documents\NOAA_&_FWS\Idaho Toxics\Final\Toxics EPA 06 May_2014+linked TOC.pdf</url><url>file://C:\Users\cmebane\Documents\NOAA_&_FWS\Idaho Toxics\Final\NMFS-2014-cover pages.pdf</url></pdf-urls></urls><research-notes> </research-notes><access-date>July 15, 2014</access-date></record></Cite></EndNote>]. For long-term exposures, concentration-effect series tested by Kovacs and Leduc [ADDIN EN.CITE ADDIN EN.CITE.DATA] supported extending this rationale for acute LC50s to chronic cyanide toxicity responses as well.

2.8.4 RPAs for Lead

2.8.4.1 Interim Protection for the Banbury Springs Lanx

To provide interim protection to the Banbury Springs lanx until a new chronic lead criterion is adopted, the EPA shall ensure that mixing zone fractions and allowable effluent volumes are constrained to limit ambient lead concentrations from exceeding 1/10 (10 percent) of the hardness-adjusted chronic aquatic life criterion for lead for discharges into occupied lanx habitat.[3]

2.8.4.2 New Chronic Aquatic Life Criterion for Lead

The EPA shall ensure, either through EPA promulgation of a criterion or EPA approval of a state-promulgated criterion, that a new chronic criterion for lead is in effect in Idaho by May 7, 2023. The new criterion shall be likely to avoid jeopardizing listed snails, the bull trout, and the Kootenai River white sturgeon, and adversely modifying the critical habitats of the bull trout and the Kootenai River white sturgeon, consistent with the discussion and analysis in this Opinion. If ESA consultation is required for the new criterion, EPA shall provide an adequate biological evaluation to the Service and initiate consultation at least 135 days in advance of May 7, 2022, unless the Service and EPA mutually agree to a different time-frame.

2.8.4.3 Hardness Floor (based on NMFS 2014a)

The EPA shall recommend that the state of Idaho adopt, and EPA will promulgate if necessary, the removal of the low end hardness floor on the hardness dependent metals criteria equations by May 7, 2017.

2.8.4.4 Analysis of the Reasonable and Prudent Alternative for Lead

Limiting mixing zone fractions to 1/4 (25 percent) of the receiving water discharge in flowing waters is effectively similar to reducing the criteria by 0.25X (NMFS 2014a). While adverse effects were identified at or below the existing criteria concentrations, other than the Banbury Springs Lanx, few if any adverse effects to listed species or habitats would be expected at 0.25X the criteria concentrations. The 0.25X mixing zone authorization is consistent with IDEQ water quality standards and EPA permitting practices, as described in the introduction to section 2.8.

Limiting ambient lead concentrations from exceeding 1/10 (10 percent) of the hardness-adjusted chronic aquatic life criterion for lead for discharges into lanx habitat during the interim period until a new and protective chronic criterion for lead is in effect will avoid adverse effects to the lanx[4].

The adoption of a new chronic aquatic life criterion for lead by May 7, 2023 will be subject to ESA consultation, as appropriate, to ensure that the new criterion will be adequately protective in terms of avoiding jeopardy to the Banbury Springs lanx.

For the above reasons, the Service concludes that the RPA for lead is not likely to jeopardize the Banbury Springs lanx.

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[3] The known extent of Banbury Springs Lanx habitat consists of four areas near Hagerman, Idaho: Banbury Springs, Briggs Springs, Box Canyon Springs, and springs within Thousand Springs State Park. There are no present surface water discharges to any of these areas.

[4] The effects analysis noted examples where an apparent no-effect concentrations was 1/5 (20 percent) of chronic criterion, but because few different water types had been tested, a 1/10 maximum fraction seems more prudent.

Note: The proposed criteria for lead are not likely to adversely affect the other listed species and critical habitats at issue in this Opinion.

2.8.5 RPAs for Mercury

2.8.5.1 Interim Protection for the Bull Trout and its Critical Habitat, and for the Kootenai River White Sturgeon and its Critical Habitat (based on NMFS 2014a)

1. Until a new chronic criterion for mercury is adopted, EPA shall use the 2001 EPA/2005 Idaho human health fish tissue criterion of 0.3 mg/kg wet weight for WQBELs and reasonable potential to exceed criterion calculations using the current methodology for developing WQBELs to protect human health. Implementation of the Idaho methylmercury criterion shall be guided by EPA's methylmercury water quality criteria implementation guidance (EPA 2010a) or IDEQ's methylmercury water quality criteria implementation guidance (IDEQ 2005); or
2. For water bodies for which appropriate fish tissue data are not available, if the geometric mean of measured concentrations of total mercury in the water is less than 2 ng/L, then the water body will be presumed to meet the fish tissue criterion of 0.3 mg/kg wet weight. If the water column concentration is greater than 2 ng/L, fish tissue data shall be collected and analyzed to determine if the fish tissue criterion of 0.3 mg/kg wet weight is met. If not, [Insert text stating what EPA needs to do under that circumstance.]

2.8.5.2 New Chronic Aquatic Life Criterion for Mercury (based on NMFS 2014a)

The EPA shall ensure, either through EPA promulgation of a criterion or EPA approval of a state-promulgated criterion, that a new chronic criterion for mercury is in effect in Idaho by May 7, 2021. The new criterion shall be likely to avoid jeopardy and adverse modification of the critical habitats of the bull trout and the Kootenai River white sturgeon, consistent with the discussion and analysis in this Opinion. If ESA consultation is required for the new criterion, EPA shall provide an adequate biological evaluation to the Service and initiate consultation at least 135 days in advance of May 7, 2020, unless the Service and EPA mutually agree to a different time-frame.

2.8.5.3 Analysis of the Reasonable and Prudent Alternative for Mercury

The interim requirement of using a human health criterion that consists of a fish tissue-based water quality criterion of 0.3 mg/kg for mercury to determine NPDES permit limits will be followed. Idaho has adopted this criterion, and is implementing it as a 0.24 mg/kg triggering residue concentration for existing dischargers, using an uncertainty (safety factor) of 0.8 times (IDEQ 2007a). This fish tissue-based criterion is close to being a threshold below which adverse effects to listed fish species are unlikely, and is considered sufficient to protect listed fish and their habitats.

The adoption of a new chronic aquatic life criterion for mercury by May 7, 2021 will be subject to ESA consultation, as appropriate, to ensure that the new criterion will be adequately protective in terms of avoiding jeopardy to listed species and adverse modification of critical habitat.

For the above reasons, the Service concludes that the RPA for mercury is not likely to jeopardize any of the listed species considered in this Opinion or to adversely modify critical habitat for the bull trout and the Kootenai River white sturgeon.

2.8.6 RPAs for Selenium

2.8.6.1 Interim Protection for the Bull Trout and its Critical Habitat, and for the Kootenai River White Sturgeon and its Critical Habitat (based on NMFS 2014a)

Until a new chronic criterion for selenium is adopted, EPA shall ensure that all effluent discharges located within habitats occupied by the bull trout and/or the Kootenai River white sturgeon and within areas of their designated critical habitat that are regulated under the NPDES program shall comply with the following terms:

1. At discharge locations where at the edge of the mixing zone, selenium concentrations are measured or projected to be higher than natural background for the locale and annual geometric mean concentrations are higher than 2 µg/L, whole body fish tissue shall be monitored in locations downstream of the discharge and in reference locations. The results shall be reported as an NPDES permit condition.
2. If the above fish tissue concentrations exceed the screening risk concentration for selenium of 7.6 mg/kg dw and are higher than reference concentrations, then the issuance of an NPDES permit shall include provisions to reduce selenium loading in order to reduce impairment of aquatic life uses. These provisions are not required if fish population surveys using surrogate species, such as the rainbow trout, show that appreciable adverse effects are not occurring, as defined in Appendix E, Biomonitoring of Effects, of NMFS (2014a).

2.8.6.2 New Chronic Aquatic Life Criterion for Selenium (based on NMFS 2014a)

The EPA shall ensure, either through EPA promulgation of a criterion or EPA approval of a state-promulgated criterion, that a new chronic criterion for selenium is in effect in Idaho by May 7, 2018. The new criterion shall be likely to avoid jeopardy and adverse modification of critical habitats of the bull trout and the Kootenai River white sturgeon, consistent with the discussion and analysis in this Opinion. If ESA consultation is required for the new criterion, EPA shall provide an adequate biological evaluation to the Service and initiate consultation at least 135 days in advance of May 7, 2017, unless the Service and EPA mutually agree to a different time-frame.

2.8.6.3 Analysis of the Reasonable and Prudent Alternative for Selenium

The interim requirement of monitoring fish tissues and taking corrective action when fish tissues exceed a selenium concentration of 7.6 mg/kg dw or 2 µg/L in the water column is likely to be sufficiently protective of habitat conditions to minimize any adverse effects to the bull trout and to the sturgeon from food web transfer-related concentrations of selenium. Any new permits addressing discharges of selenium will be subject to individual ESA consultation, as appropriate, to ensure that jeopardy or adverse modification of critical habitat is not likely to occur. Based on these protective, interim practices and the low number of likely discharges, the continued use of the existing selenium standard up until May 7, 2018 is likely to result in only minor adverse effects to these species and their critical habitats.

The adoption of a new chronic aquatic life criterion for selenium by May 7, 2018 will be subject to ESA consultation, as appropriate, to ensure that the new criterion is adequately protective in terms of avoiding jeopardy and adverse modification of critical habitat.

For the above reasons, the Service concludes that the RPA for selenium is not likely to jeopardize any of the listed species considered in this Opinion or adversely modify their critical habitats.

2.8.7 RPAs for Zinc

2.8.7.1 Interim Protection for the Bull Trout and the Kootenai River White Sturgeon and Their Critical Habitats (based, in part, on NMFS 2014a)

Until new criteria are adopted, a zone of passage sufficient to allow unimpeded passage of adult and juvenile bull trout and sturgeon must be maintained around any mixing zone for discharges that include zinc.

NPDES permits for new discharges must ensure a zone of passage (sufficient to allow unimpeded passage of adult and juvenile bull trout and sturgeon) persists under seasonal flow conditions; see Appendix D of NMFS (2014a). If the regulatory mixing zone is limited to less than or equal to 25 percent of seasonal flow conditions, then a sufficient zone of passage is presumed to be present.

NPDES permits reissued for existing discharges must ensure a zone of passage (sufficient to allow unimpeded passage of adult and juvenile bull trout and sturgeon) persists under seasonal flow conditions. If the regulatory mixing zone is limited to less than or equal to 25 percent of the volume of a stream, then sufficient zone of passage is presumed to be present. If existing discharges were calculated using greater than 25 percent of seasonal flow conditions for applying aquatic life criteria, the mixing zone must be reduced to 25 percent unless one of the following conditions exists:

1. An evidence-based "Salmonid Zone of Passage Demonstration" (see NMFS 2014a, Appendix F) indicates that impeding fish movements is unlikely; or

2. Biological monitoring of aquatic communities in the downstream receiving waters shows no appreciable adverse effects relative to reference conditions as described in Appendix E, Biomonitoring of Effects, of NMFS (2014), and biological WET testing is consistently negative, as defined below:
   a. WET testing shall be required, using at least the 7-day *Ceriodaphnia dubia* 3-brood test and the 7-day fathead minnow growth and survival test. If previous testing of a facility's effluents have demonstrated that one test is more sensitive, at EPA's discretion, it is acceptable to base further testing on only the more sensitive test. Toxicity trigger concentrations for WET tests shall also be established using dilution series based upon no more than 25 percent of the applicable critical flow volume. The dilution series for WET testing (7Q10) shall be designed such that one treatment consists of 100 percent effluent, and at least one treatment is more dilute than the targeted critical flow conditions. Receiving waters upstream of the effluent discharge should be used as dilution water.

      The "critical concentration" is defined here as the condition when the smallest permitted dilution factor occurs, modified by a 25 percent mixing zone fraction. For

example, if the minimum effluent dilution occurring at a site is a 1:4 ratio (one part effluent to four parts streamwater), then because only 25 percent of the measured streamflow is authorized for dilution; then the dilution factor for effluent testing is likewise reduced to 1:1. The critical concentration would then be 50 percent effluent, i.e., one part each effluent and dilution water.

WET tests results need to be consistently negative to indicate the absence of appreciable instream toxicity of zinc in test conditions that reflect the critical effluent concentration discussed above. A "negative test result" is produced by a test meeting the performance objectives of a passing test according to EPA (2002c) or EPA (2010c). Test results are considered to be consistently negative if the failure rate is less than one in 20.

b. If instream biological monitoring shows adverse effects to reference conditions or if WET tests are not consistently negative, then a toxicity identification evaluation and toxicity reduction evaluation (TIE/TRE) must be undertaken to identify and remedy the causes of zinc toxicity; such remedies may include reducing effluent limits for zinc as warranted. Because considerable judgment may be involved in designing and carrying out a TIE/TRE, and because the results are performance-based (e.g., no detectable zinc toxicity observed), more specific guidance is inappropriate to provide here. See Mount and Hockett [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>Mount</Author><Year>2000</Year><RecNum>2342</RecNum><DisplayText>(2000)</DisplayText><record><rec-number>2342</rec-number><foreign-keys><key app="EN" db-id="aperft9tzr5wsye92dpxzadn5d0a0vvdxr9w" timestamp="0">2342</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Mount, David R.</author><author>Hockett, J. Russell</author></authors></contributors><titles><title>Use of toxicity identification evaluation methods to characterize, identify, and confirm hexavalent chromium toxicity in an industrial effluent</title><secondary-title>Water Research</secondary-title></titles><periodical><full-title>Water Research</full-title><abbr-1>Water Res.</abbr-1></periodical><pages>1379-1385</pages><volume>34</volume><number>4</number><keywords><keyword>WET (whole effluent toxicity)</keyword><keyword>Idaho toxics consultation</keyword></keywords><dates><year>2000</year></dates><urls></urls></record></Cite></EndNote>] for an example of a TIE/TRE.

2.8.2.2 New Acute and Chronic Aquatic Life Criteria for Zinc

The EPA shall ensure, either through EPA promulgation of criteria or EPA approval of a state-promulgated criteria, that new acute and chronic criteria for zinc are in effect in Idaho by May 7, 2022. The new criteria shall be likely to avoid jeopardizing listed species, and avoid adversely modifying the critical habitats for the bull trout and the sturgeon consistent with the discussion and analysis in this Opinion. If ESA consultation is required for the new criteria, EPA shall provide an adequate biological evaluation to the Service and initiate consultation at least 135 days in advance of May 7, 2021 unless the Service and EPA mutually agree to a different time-frame.

2.8.8.3 Analysis of the Reasonable and Prudent Alternative for Zinc

Implementation of more restrictive practices in developing zinc discharge limits that are authorized under NPDES permits as described in the RPA for zinc is likely to sufficiently minimize adverse effects to the bull trout and to the sturgeon as well as to their critical habitats. These practices will ensure an adequate zone of passage exists for these species under all flow conditions, and provide for biological monitoring and WET testing to ensure that permit limits are protective of the bull trout and the sturgeon and their prey species. This monitoring will be done at each discharge site by taking into account the localized conditions that affect the toxicity of zinc. Based on development of these site-specific limits and the associated monitoring of discharge levels, combined with the fact that the Service consults, as appropriate, with EPA over each new or reissued NPDES permit, we expect only minor adverse effects to the bull trout, Kootenai River white sturgeon, and to their critical habitats.

Limiting mixing zone fractions to 1/4 (25 percent) of the receiving water discharge in flowing waters is effectively similar to reducing the criteria by 0.25X (NMFS 2014a). While adverse effects were identified at or below the existing criteria concentrations, few if any adverse effects to listed species or habitats would be expected at 0.25X the criteria concentrations. The 0.25X mixing zone authorization is consistent with IDEQ water quality standards and EPA permitting practices, as described in the introduction to section 2.8.

The adoption of a new acute and chronic aquatic life criteria for zinc by May 7, 2022 will be subject to ESA consultation, as appropriate, to ensure that the new criteria will be adequately protective in terms of avoiding jeopardy and adverse modification of critical habitat.

For the above reasons, the Service concludes that the RPA for zinc is not likely to jeopardize any of the listed species considered in this Opinion or adversely modify their critical habitats.

2.8.8 RPAs for Nickel

2.8.8.1 Interim Protection for Listed Snails

To provide interim protection to the Banbury Springs lanx, until new criteria are adopted, the EPA shall ensure that mixing zone fractions and allowable effluent volumes are constrained to limit ambient nickel concentrations in occupied lanx habitat from exceeding 1/50 (2 percent) of the hardness-adjusted chronic aquatic life criterion concentration for nickel.

To provide interim protection to the Snake River physa, Bliss Rapids snail, and the Bruneau hot springsnail, until new criteria are adopted, the EPA shall ensure that mixing zone fractions and allowable effluent volumes are constrained to limit ambient nickel concentrations from exceeding 1/4 (25 percent) of the hardness-adjusted chronic aquatic life criterion for nickel for discharges into occupied snail habitat.

2.8.8.2 New Acute and Chronic Aquatic Life Criteria for Nickel

The EPA shall ensure, either through EPA promulgation of criteria or EPA approval of a state-promulgated criteria, that new criteria for nickel are in effect in Idaho by May 7, 2022. The new criteria shall be protective in terms of avoiding jeopardy of the Snake River physa, Bliss Rapids snail, Banbury Springs lanx, and Bruneau hot springsnail consistent with the discussion and analysis in this Opinion. If ESA consultation is required for the new criteria, EPA shall provide

an adequate biological evaluation to the Service and initiate consultation at least 135 days in advance of May 7, 2021, unless the Service and EPA mutually agree to a different time-frame.

2.8.8.3 Removal of Low-End Hardness Floor (based on NMFS 2014a)

The EPA shall recommend that the state of Idaho adopt, and EPA will promulgate, if necessary, the removal of the low end hardness floor on the nickel aquatic life criteria equations by May 7, 2017.

2.8.8.4 Analysis of the Reasonable and Prudent Alternative for Nickel

Limiting instream discharge concentrations of nickel into occupied lanx habitat to 2 percent of the hardness adjusted chronic aquatic life criterion during the interim period until new and protective aquatic life criteria for nickel are in effect will avoid adverse effects of nickel to the Banbury Springs lanx (section 2.5.10) and is not likely to adversely affect the other listed species and critical habitats at issue in this Opinion.

Limiting instream discharge concentrations of nickel into occupied Snake River physa, Bliss Rapids snail, and Bruneau hot springsnail habitats to 25 percent of the chronic aquatic life criterion during the interim period until new and protective aquatic life criteria for nickel are in effect will avoid adverse effects of nickel to the listed snails and is not likely to adversely affect the other listed species and critical habitats at issue in this Opinion.

Limiting mixing zone fractions to 1/4 (25 percent) of the receiving water discharge in flowing waters is effectively similar to reducing the criteria by 0.25X (NMFS 2014a). While adverse effects were identified at or below the existing criteria concentrations, few if any adverse effects to listed species or habitats were identified at 0.25X or less of the criteria concentrations (2.5.10). The 0.25X mixing zone authorization is consistent with IDEQ water quality standards and EPA permitting practices, as described in the introduction to section 2.8. In the limited case of the lanx habitats, limiting potential future effluent volumes or mixing zone allowances to avoid increasing Ni concentrations above 2 percent of the hardness-adjusted criteria is not inconsistent with IDEQ water quality standards as described in the introduction to this section (section 2.8). At present, there are no discharges to occupied lanx habitats.

The adoption of new chronic aquatic life criteria for nickel by May 7, 2022 will be subject to ESA consultation, as appropriate, to ensure that the new criteria will be adequately protective in terms of avoiding jeopardy to the listed snails.

For the above reasons, the Service concludes that the RPA for nickel is not likely to jeopardize any of the listed species considered in this Opinion or adversely modify their critical habitats.

Note: The proposed criteria for nickel are not likely to adversely affect the other listed species and critical habitats at issue in this Opinion.

2.8.9 Summary of the RPAs

See Table 13 below.

Table [SEQ Table * ARABIC]. Summary of RPAs and implementation schedule.

Metal	Interim Protection	New Criteria in effect in Idaho by:	Consultation (if needed) on new criteria initiated by:	Remove Low End Hardness Floor, if applicable, by:	Source of RPA
Arsenic	Human Health (snails); monitoring based NPDES provisions (fish)	May 7, 2021	May 7, 2020	N/A	NMFS (2014a)
Copper	Discharge limit of ≤ 25% of 2007 chronic criterion (snails); zone of passage (fish)	May 7, 2017	N/A	May 7, 2017	NMFS (2014a)
Cyanide	Zone of passage	May 7, 2021	May 7, 2020	N/A	USFWS; this Opinion
Lead	Discharge limit of ≤ 10% of chronic criterion (Banbury Springs lanx)	May 7, 2023	May 7, 2022	May 7, 2017	USFWS; this Opinion
Mercury	Human Health	May 7, 2021	May 7, 2020	N/A	NMFS (2014a)
Selenium	Monitoring based NPDES permit condition (fish)	May 7, 2018	May 7, 2017	N/A	NMFS (2014a)
Zinc	Zone of passage (fish)	May 7, 2022	May 7, 2021	N/A	USFWS; this Opinion
Nickel	Discharge limit of ≤ 2% of chronic criterion for lanx and ≤ 25% for other listed snails	May 7, 2022	May 7, 2021	May 7, 2017	USFWS; this opinion

If new criteria development and associated consultations, as appropriate, are not finalized by the effective dates listed above, all interim measures identified in the individual RPA shall be adopted as final for purposes of establishing aquatic life criteria in association with Idaho's water quality standards.

2.8.10 Notification of EPA's Final Decision

In accordance with 50 CFR 402.15(b) of the implementing regulations for ESA section 7, the EPA is required to notify the Service of its final decision regarding implementation of the proposed action.